Pelatihan Riset Operasional Penyakit Tropis – Poltekkes Kemenkes Kupang
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Masalah Penelitian Malaria

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Pengendalian, Eliminasi, dan Eradikasi Malaria

Pengendalian malaria:

Pengendalian malaria (malaria control) adalah menurunkan beban penyakit sampai pada level yang tidak lagi merupakan masalah kesehatan masyarakat.

Eliminasi malaria:

Eliminasi malaria (malaria elimination) adalah pemutusan transmisi (penularan) lokal (indigineous) dari spesies parasite malaria tertentu pada suatu area geografi tertentu. Insidensi malaria yang diperoleh setempat (lokal) adalah nol, meskpun kasus impor masih dapat terjadi. Diperlukan langkah pengendalian yang berkelanjutan untuk mencegah timbul kembalinya transmisi.

Eradikasi malaria:

Eradikasi malaria (malaria eradication) adalah penurunan insidensi infeksi malaria hingga nol secara permanen di seluruh dunia.

Pengendalian Vektor

Prinsip:
Pengendalian vektor merupakan cara utama mencegah dan menurunkan transmisi (penularan) malaria. Jika cakupan intervensi pengendalian vektor di suatu area tertentu cukup luas, maka akan diperoleh proteksi lintas komunitas di area itu

Ada dua bentuk pengendalian vektor yang masing-masing terbukti efektif di berbagai situasi:

1. Insecticide treated mosquito net (ITN)
2. Indoor residual spraying (IRS)

Insecticide Treated Mosquito Net

Prinsip:
Insecticide treated mosquito net (ITN) merupakan cara yang terbukti efektif untuk mengurangi kontak antara nyamuk dan manusia dengan memberikan barier fisik dan efek insektisida.

Variabel:

1. Penggunaan ITN
2. Faktor sosio-demografi kultural
3. Ketersediaan ITN
4. Cakupan
5. Populasi nyamuk
6. Transmisi malaria

Indoor Residual Spraying

Prinsip:
Indoor residual spraying (IRS) merupakan cara lain yang terbukti efektif menurunkan transmisi malaria dengan cepat. IRS menyemprot bagian dalam struktur rumah dengan insektisida, biasanya dua kali setahun. Cakupan IRS harus tinggi agar dapat memberikan proteksi kepada komunitas dengan signifikan.

Variabel:
1. Residual efficacy
2. Interaksi (modifikasi efek) ITN oleh IRS
3. Cakupan
4. Populasi nyamuk
5. Transmisi malaria

Resistensi Insektisida

Prinsip:
Di beberapa tempat di dunia timbul resistensi nyamuk Anopheles terhadap insektisida. Resistensi insektisida dapat mengancam kemajuan dalam pengendalian malaria melalui intervensi pengendalian vektor. Karena itu diperlukan strategi manajemen yang efektif untuk mengatasi resistensi insektisida.

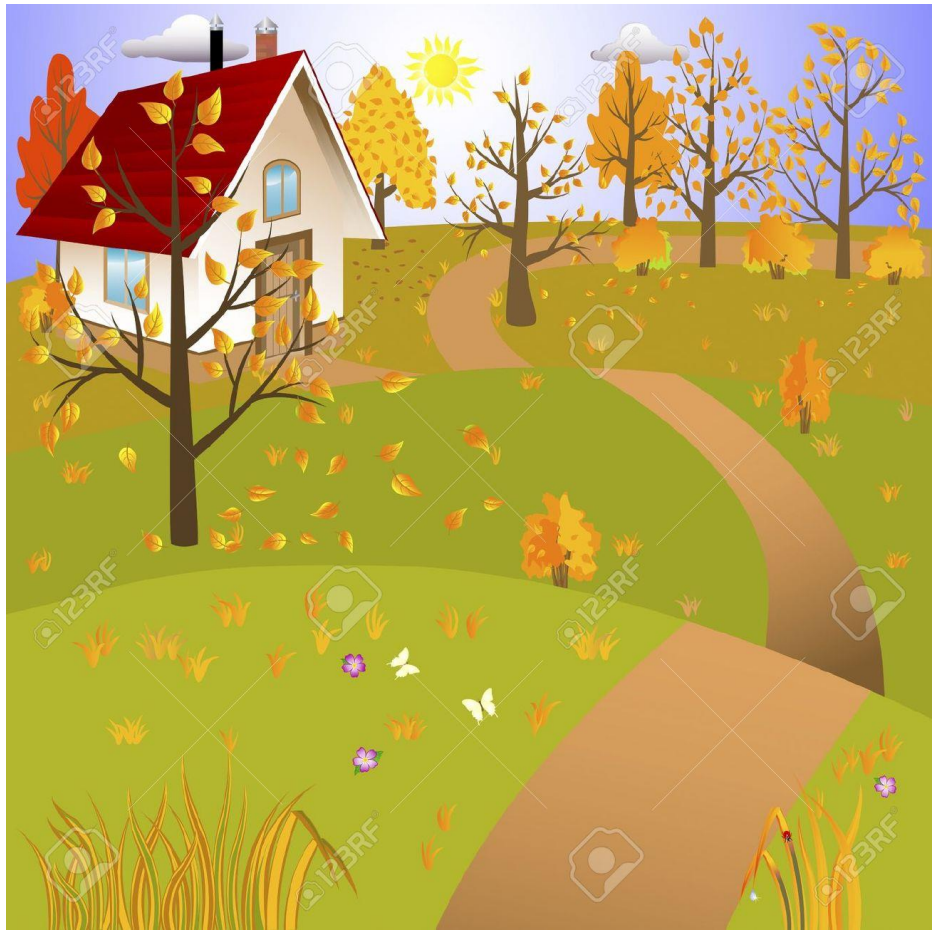
Variabel:
1. Deteksi resistensi insektisida
2. Manajemen untuk mengatasi resistensi insektisida

Diagnosis dan Pengobatan

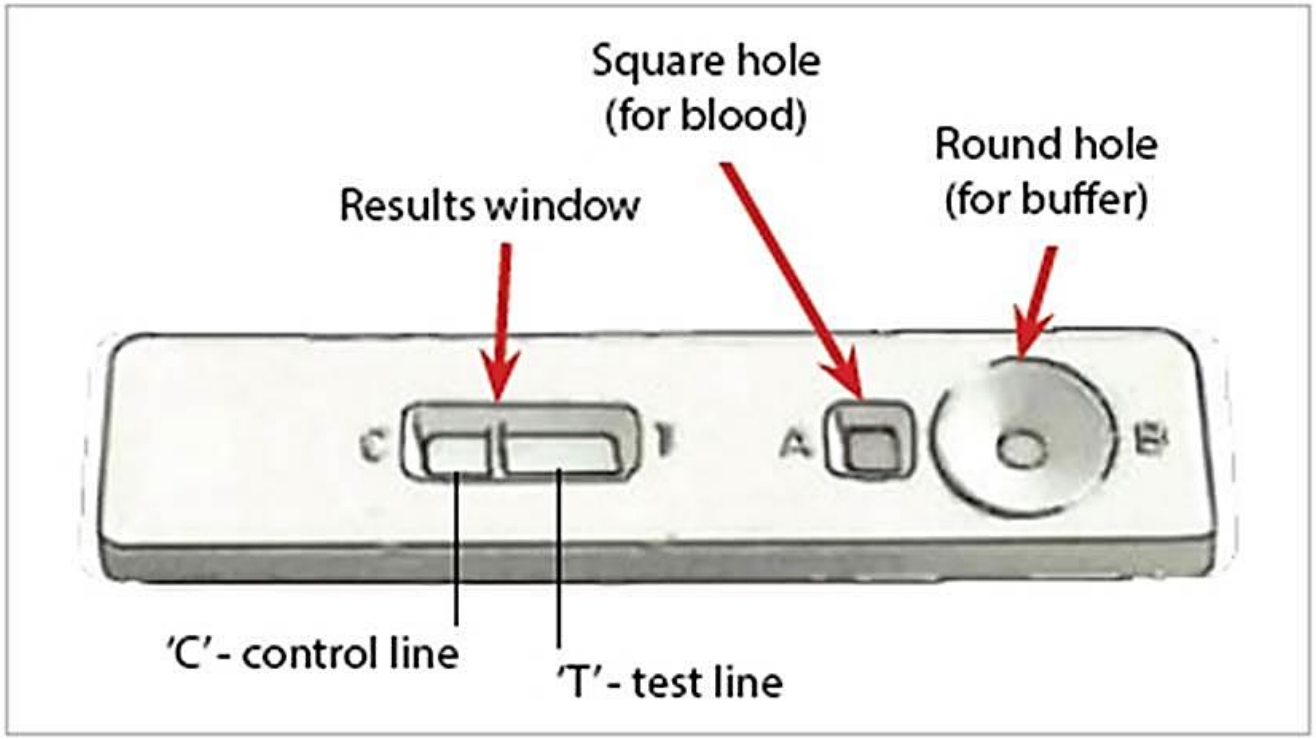
Prinsip:
Diagnosis dini dan pengobatan segera mengurangi insidensi penyakit dan mencegah kematian karena malaria.

Variabel:
1. Waktu sejak tanda dan gejala klinis hingga diagnosis
2. Waktu sejak diagnosis malaria hingga pengobatan
3. Insidensi
4. Mortalitas
5. Pendidikan petugas
6. Pelatihan

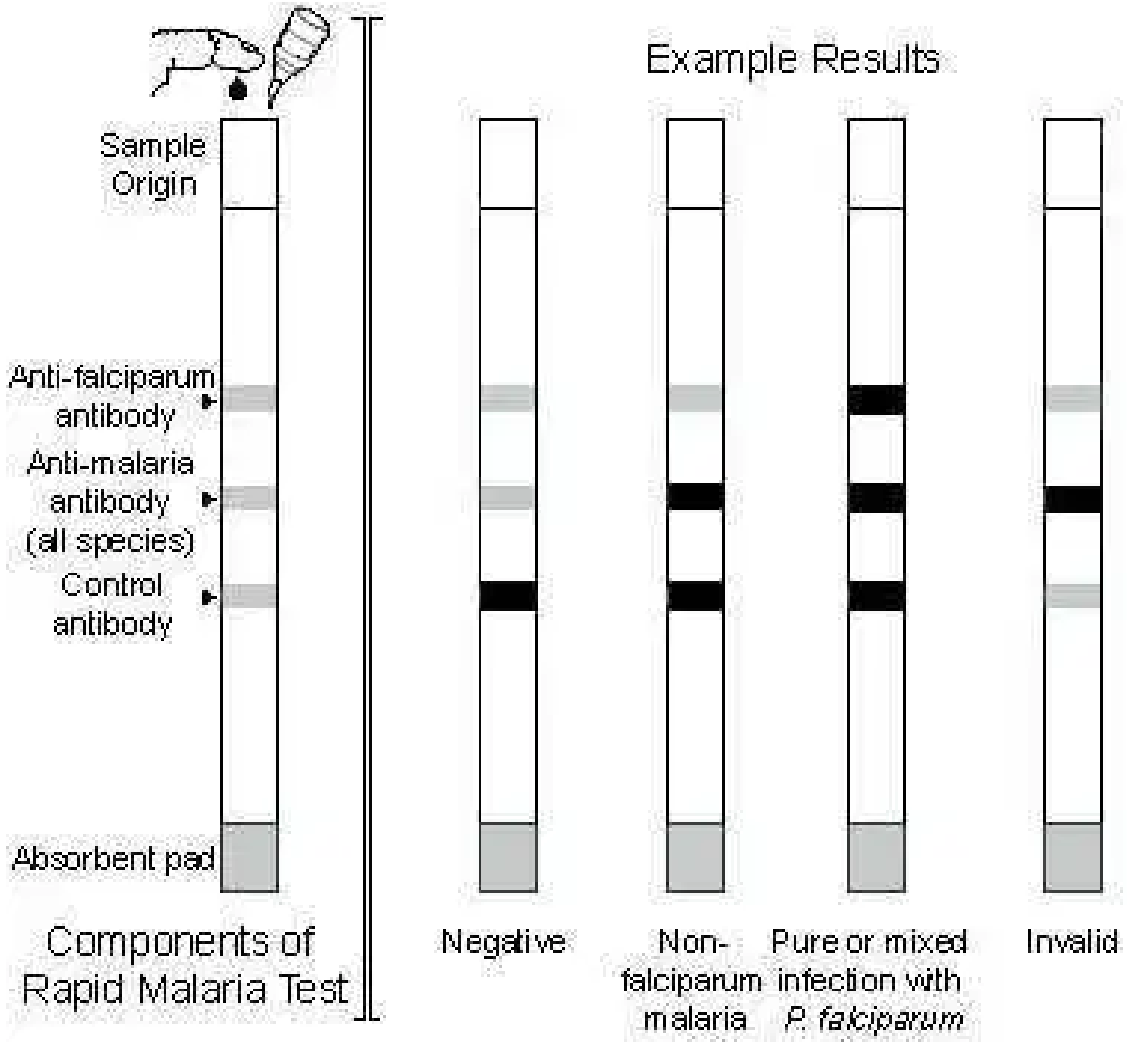
Catatan:
- Konfirmasi kasus (dari kasus suspek) menggunakan tes diagnostik berbasis parasit (mikroskopi atau rapid diagnostic test).
- Pengobatan terbaik menggunakan artemisinin-based combined therapy (ACT)



Rapid Diagnostic Test



Inside the cassette is a strip made of filter paper and nitrocellulose. Typically, a drop of blood is added to the RDT through one hole (A; sample well), and then a number of drops of buffer usually through another hole (B; buffer well). Buffer carries the blood along the length of the RDT.

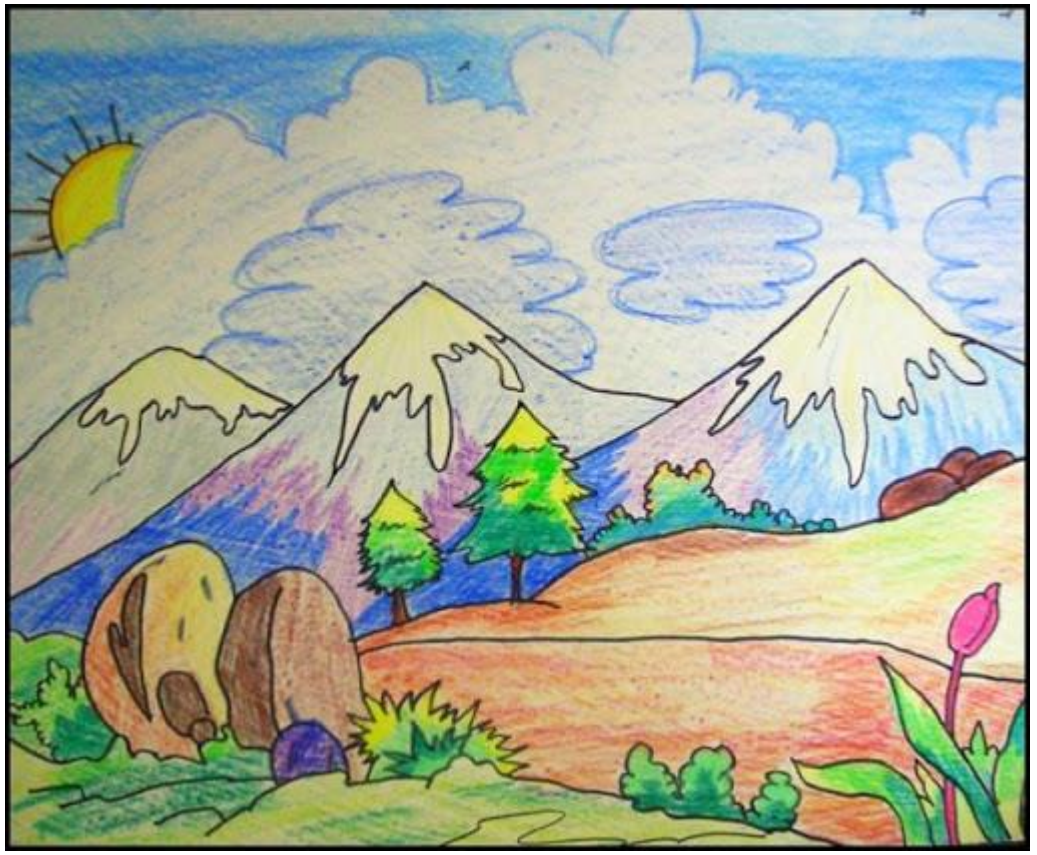


Resistensi Obat Anti-Malaria

Prinsip:
Melindungi efikasi obat anti-malaria dari resistensi penting bagi upaya pengendalian dan eliminasi malaria.

Variabel:
1. Regularitas monitoring
2. Deteksi dini resistensi obat anti-malaria
3. Pola distribusi resistensi obat
4. Efikasi obat anti-malaria
5. Respons terhadap resistensi obat anti-malaria

Catatan:
Dulu resistensi parasite malaria P. falciparum terjadi pada Chloroquine dan Sulfadoxine-pyrimethamine (SP), kini dialami ACT



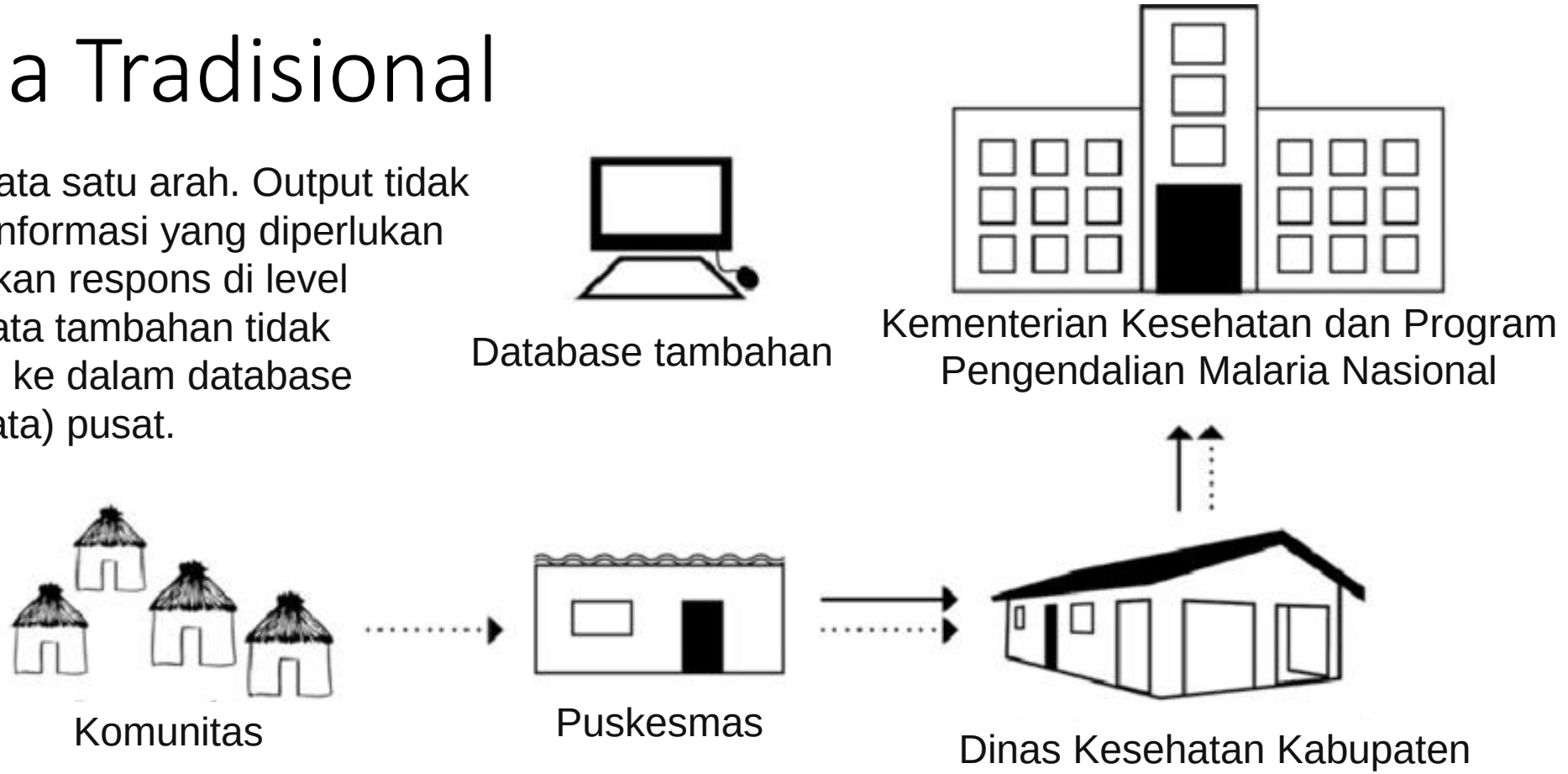
Surveilans Malaria

Prinsip:
Surveilans yang efektif dibutuhkan di semua level sistem menuju eliminasi malaria. Sistem surveilans yang kuat diperlukan untuk melakukan respons yang tepat waktu dan efektif di daerah endemis, untuk mencegah outbreak dan kembalinya kasus malaria, dan untuk memantau kemajuan pengendalian malaria.

Variabel:
1. Akurasi
2. Regularitas
3. Fleksibilitas
4. Penggunaan informasi
5. Akseptabilitas
6. Ketepatan waktu
7. Umpan balik
8. dan sebagainya…….

Sistem Surveilans Malaria Tradisional

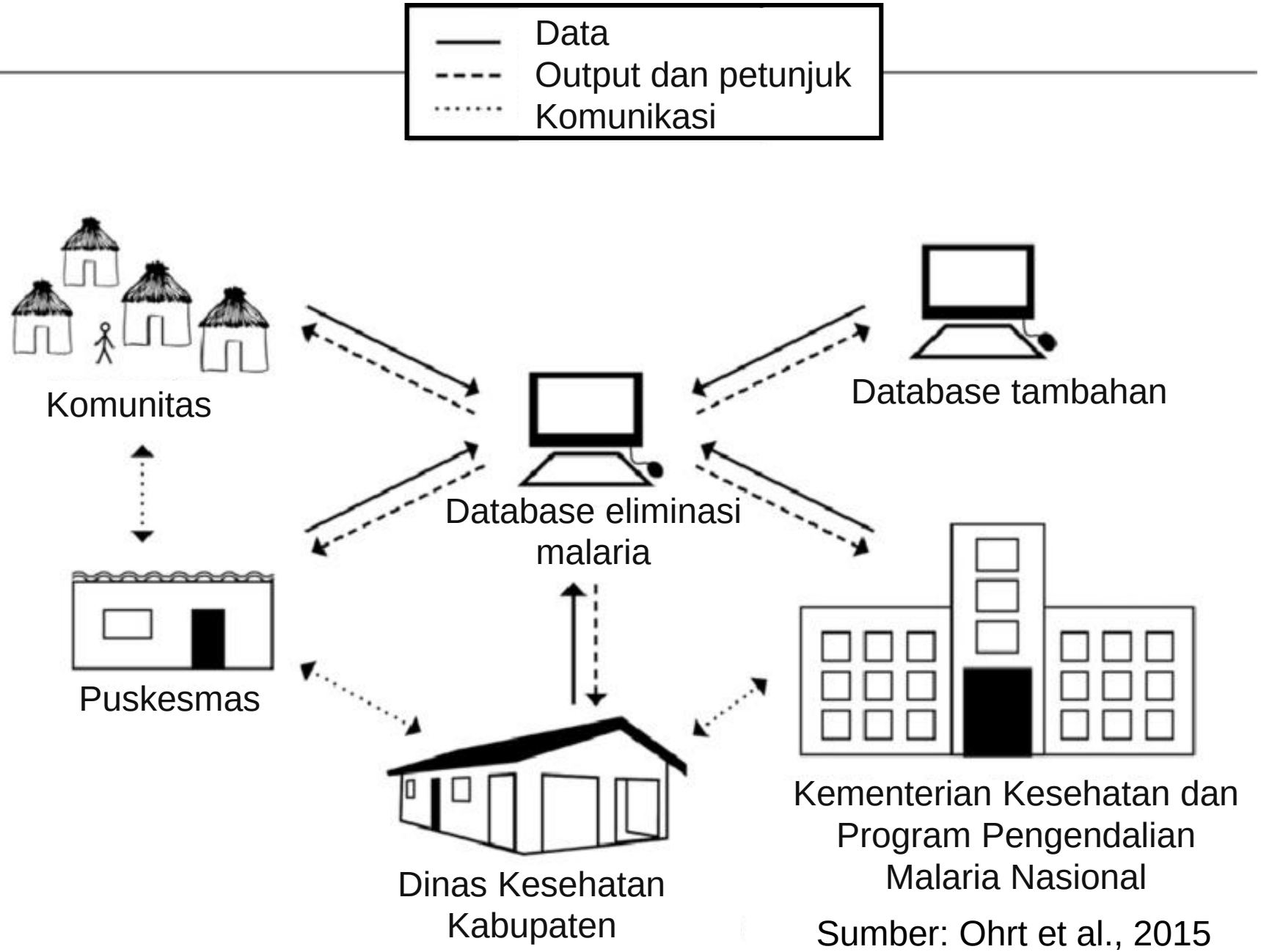
Pergerakan data satu arah. Output tidak memberikan informasi yang diperlukan untuk melakukan respons di level komunitas. Data tambahan tidak diintegrasikan ke dalam database (pangkalan data) pusat.



Sumber: Ohrt et al., 2015

Sistem Surveilans Malaria Ideal

Semua level sistem surveilans malaria memberikan kontribusi data ke databse pusat. Data base pusat melakukan analisis data dan memberikan petunjuk kepada semua level. Komunikasi dua arah.



Sumber: Ohrt et al., 2015

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Samir Bhatt and Peter Gething

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Samir Bhatt, Peter Gething*

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Comparison of coverage with insecticide-treated nets in a Tanzanian town and villages where nets and insecticide are either marketed or provided free of charge

CA Maxwell[1,2], RT Rwegoshora[2], SM Magesa[2] and CF Curtis*[1]

Address: [1]London School of Hygiene & Tropical Medicine, London WC1E 7HT, UK and [2]National Institute for Medical Research, Amani Medical Research Centre, Box 81, Muheza, Tanzania

Email: CA Maxwell - cmaxwell@nimr.or.tz; RT Rwegoshora - theophilr@hotmail.com; SM Magesa - smagesa@hotmail.com; CF Curtis* - chris.curtis@lshtm.ac.uk

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Olowookere *et al. Asia Pacific Family Medicine* 2013, **12**:2
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Use of insecticide treated net and malaria preventive education: effect on malaria parasitemia among people living with AIDS in Nigeria, a cross-sectional study

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Berthe *et al. Malar J* (2019) 18:320
https://doi.org/10.1186/s12936-019-2952-2

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Poverty and food security: drivers of insecticide-treated mosquito net misuse in Malawi

Sara Berthe[1*], Steven A. Harvey[2], Matthew Lynch[1], Hannah Koenker[1], Vincent Jumbe[3], Blessings Kaunda-Khangamwa[4] and Don P. Mathanga[4,5]

Deressa *et al. Parasites & Vectors* 2014, **7**:132
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Parasites & Vectors

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Effect of combining mosquito repellent and insecticide treated net on malaria prevalence in Southern Ethiopia: a cluster-randomised trial

Wakgari Deressa[1*], Yemane Y Yihdego[2], Zelalem Kebede[3], Esey Batisso[3], Agonafer Tekalegne[3] and Getachew A Dagne[4]

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Inequalities in purchase of mosquito nets and willingness to pay for insecticide-treated nets in Nigeria: Challenges for malaria control interventions

Obinna Onwujekwe[1,2], Kara Hanson*[3] and Julia Fox-Rushby[3,4]

Biadgilign *et al. International Journal for Equity in Health* (2015) 14:99
DOI 10.1186/s12939-015-0249-9

INTERNATIONAL JOURNAL FOR EQUITY IN HEALTH

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Determinants of willingness to pay for the retreatment of insecticide treated mosquito nets in rural area of eastern Ethiopia

Sibhatu Biadgilign[1*], Ayalu Aklilu Reda[2,3,5] and Haji Kedir[2,4]

Okumu *Malar J* (2020) 19:260
https://doi.org/10.1186/s12936-020-03321-6

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The fabric of life: what if mosquito nets were durable and widely available but insecticide-free?

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Eskindir Loha and Bernt Lindtjørn

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Poster presentation | Published on: 15 October 2012

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Loha and Lindtjørn *Malaria Journal* 2012, **11**(Suppl 1):P66
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Basel, Switzerland. 10-12 October 2012

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Combining long-lasting insecticidal nets and indoor residual spraying for malaria prevention in Ethiopia: study protocol for a cluster randomized controlled trial

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From Challanges in malaria research: Core science and innovation
Oxford, UK. 22-24 September 2014

Desalegn *et al. Malar J (2018) 17:300*
https://doi.org/10.1186/s12936-018-2458-3

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Wall-type and indoor residual spraying application quality affect the residual efficacy of indoor residual spray against wild malaria vector in southwest Ethiopia

Zerihun Desalegn, Teklu Wegayehu and Fekadu Massebo*

Padonou *et al. Parasites & Vectors* 2012, **5**:262
http://www.parasitesandvectors.com/content/5/1/262

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Decreased proportions of indoor feeding and endophily in *Anopheles gambiae s.l.* populations following the indoor residual spraying and insecticide-treated net interventions in Benin (West Africa)

Gil Germain Padonou[1,2*], Ghelus Gbedjissi[2], Anges Yadouleton[2], Roseric Azondekon[2], Ossé Razack[1,2], Olivier Oussou[2], Virgile Gnanguenon[2], Aikpon Rock[1,2], Michel Sezonlin[1] and Martin Akogbeto[1,2]

Soma *et al. Parasites Vectors* (2021) 14:58
https://doi.org/10.1186/s13071-020-04563-8

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Insecticide resistance status of malaria vectors *Anopheles gambiae* (*s.l.*) of southwest Burkina Faso and residual efficacy of indoor residual spraying with microencapsulated pirimiphos-methyl insecticide

Dieudonné Diloma Soma[1,2,3*†], Barnabas Zogo[3,4†], Domonbabele François de Sales Hien[1], Aristide Sawdetuo Hien[1,2], Didier Alexandre Kaboré[1,2], Mahamadi Kientega[1,2], Anicet Georges Ouédraogo[2], Cédric Pennetier[3,4], Alphonsine Amanan Koffi[4], Nicolas Moiroux[1,3†] and Roch Kounbobr Dabiré[1†]

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Hugh JW Sturrock[1*], Teun Bousema[2], Jacklin Mosha[3], Roly D Gosling[1]

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Surveillance of vector populations and malaria transmission during the 2009/10 El Niño event in the western Kenya highlands: opportunities for early detection of malaria hyper-transmission

Ednah N Ototo[1,2*], Andrew K Githeko[1], Christine L Wanjala[1,2] and Thomas W Scott[3]

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